

In the Claims

The following Listing of Claims replaces all prior versions in the application:

LISTING OF CLAIMS

What is claimed is:

1-2 (Canceled)

3. (Original) A process comprising the steps of:

receiving simultaneously in a plurality of diplexer filters from a cable TV signal delivery medium downstream analog CATV signals and downstream RF signals carrying downstream packet data and upstream RF signals carrying upstream packet data and filtering out in each diplexer filter all but said downstream analog CATV signals, and, in each said diplexer filter, receiving from a LAN segment input baseband packet data transmissions, and, in each diplexer filter, combining said baseband packet data transmissions with said downstream analog CATV signals and transmitting the combined signals on a coaxial cable drop line coupled to a local area network of a predetermined one of a plurality of subscribers who share a cable modem outside the premises of said subscribers, and selectively filtering to select upstream baseband packet data from the local area network of each subscriber on said coaxial cable drop line and coupling said selected upstream baseband packet data onto said LAN segment;

receiving simultaneously in a shared cable modem from said cable TV signal delivery medium downstream analog CATV signals and downstream RF signals carrying downstream packet data and upstream RF signals carrying upstream packet data transmitted by other cable modems and filtering out in said shared cable modem all but

said downstream RF signals carrying downstream packet data and recovering said packet data and filtering out all packets not addressed to a subscriber that is sharing said shared cable modem and transmitting the remaining packets out on a first LAN segment or other data path, and receiving upstream baseband packet data from said first LAN segment and transmitting them to said headend over said cable TV signal delivery medium using whatever upstream media access control and physical layer protocols are in use on said able TV signal delivery medium;

receiving said packets transmitted on said first LAN segment or other data path and examining the address data in the packet headers and routing each packet to an appropriate LAN segment or segments coupled to one or more diplexer filters, and receiving said upstream baseband packet data transmissions from said LAN segments coupled to said diplexer filters and concentrating them onto said first LAN segment for transmission to said shared cable modem.

4. (Original) The process of claim 3 further comprising the steps carried out in each subscriber premises of receiving said downstream baseband packet data transmissions with said downstream analog CATV signals in a diplexer filter from one of said coaxial cable drop lines and high pass filtering said analog CATV signals and coupling them to a coaxial cable CATV signal distribution system in said customer premises, and low pass filtering said baseband packet data and coupling said packet data to a local area network medium in said customer premises, and selectively filtering upstream baseband packet data transmissions on said local area network medium so as to couple them onto said coaxial cable drop line, and receiving upstream baseband packet data transmissions from said local area network medium and selectively filtering so as to couple said upstream baseband packet data transmissions onto said coaxial cable drop line.

5. (Original) An apparatus comprising:

filtration and combining means having a plurality of baseband LAN data inputs and a plurality of RF inputs for coupling to a CATV signal delivery medium and having a plurality coaxial cable drop line outputs for coupling to coaxial cable drop lines, each coupled to a local area network of a predetermined subscriber, for receiving at each of said RF inputs downstream analog CATV signals and downstream RF signals carrying downstream packet data and upstream RF signals carrying upstream packet data and for filtering all but said downstream analog CATV signals and transmitting said downstream analog CATV signals out simultaneously at each coaxial cable drop line output, and, for receiving at each LAN data input packet data coupled to a LAN segment transmissions addressed to a predetermined subscriber, and for combining said baseband packet data transmissions with said downstream analog CATV signals and transmitting the combined signals on the coaxial cable drop line output coupled to a local area network of a predetermined subscriber to which said packet data is supposed to be delivered, and for receiving upstream baseband packet data on said coaxial cable drop lines from one or more of said subscribers and selectively filtering so as to couple said upstream baseband, packet data onto an appropriate LAN segment dedicated to carrying upstream and downstream LAN packet traffic for the particular subscriber from which each upstream LAN packet originated;

shared cable modem means having an RF input for coupling to a CATV signal delivery medium and having a LAN output coupled to a LAN segment, for receiving simultaneously downstream analog CATV signals and downstream RF signals carrying downstream packet data and upstream RF signals carrying upstream packet data transmitted by other shared and unshared cable modems and for filtering out all but said downstream RF signals carrying downstream packet data and for recovering said packet data and for filtering out all packets not addressed to a subscriber that is sharing said shared cable modem means and for transmitting the remaining packets out on a first LAN segment coupled to said LAN output, and for receiving upstream LAN packets from said first LAN segment and transmitting them to said headend using whatever media access control and physical layer protocols that are in use on said CATV signal delivery medium;

switch and concentrator means having a first LAN segment input coupled to said

first LAN segment and having a plurality of LAN ports, each coupled by a LAN segment to a LAN: input of said filtration and combining means, for receiving said packets transmitted on said first local area network segment from said shared cable modem means and examining the address data in the packet headers and routing each packet to an appropriate LAN segment or segments coupled to one or more LAN input of said filtration and combination means, and for receiving upstream LAN packet data from each said LAN segment coupled to a LAN input of said filtration and combining means and concentrating said upstream LAN packets for transmission on said first LAN segment to said shared cable modem means; and

filtration and distribution means in each customer premises coupled by a coaxial cable to one of said coaxial cable drop lines from said filtration and combining means for selecting said analog CATV signals and coupling them onto an analog CATV signal distribution system in said customer premises, and for selecting said baseband packet traffic and coupling it to a local area network medium in said customer premises.

6. (Original) A signal distribution system for transmitting and receiving signals on a cable television medium carrying analog television broadcasts and digital voice-over-IP data carrying telephony signals, comprising:

a shared cable modern coupled to said medium;

a plurality of junction boxes, each having a coaxial cable input, a twisted pair tip and ring input and a siamese cable output for coupling to a siamese cable for coupling to at least one telephone and at least one television in the premises of a subscriber who shares said cable modem, each said junction box coupling analog phone signals arriving at said twisted pair tip and ring input to a tip and ring twisted pair terminal at said siamese cable output so that when a siamese cable is correctly coupled to said output, said twisted pair tip and ring input will be coupled to a tip and ring pair of said siamese cable going to the premises of a subscriber that shares said cable modem, and each said junction box coupling analog cable television signals received at said coaxial cable input

to the coaxial cable portion of any siamese cable coupled to said siamese cable output;

a voice-over-IP gateway coupled by a data path to said shared cable modem, and having a plurality of subscriber line interface circuits, each coupled to said twisted pair tip and ring input of a junction box by a tip and ring twisted pair.

7. (Original) The apparatus of claim 6 further comprising a junction box in each subscriber premises having an input for coupling to a siamese cable coupled to a junction box outside said customer premises, said junction box having connections to couple said coaxial cable portion of said siamese cable to an analog CATV signal distribution system in said customer premises and connections to couple said twisted pair portion of said siamese cable to a twisted pair POTS analog phone signal distribution system in said customer premises.

8. (Original) The apparatus of claim 6 wherein said cable modem functions to receive said downstream voice-over-IP packets and select only those addressed to a subscriber that shares said cable modem and route them to said voice-over-IP gateway, and wherein said voice-over-IP gateway functions to receive said voice-over-IP packets from said cable modem and routes them to the subscriber line interface circuit coupled to the subscriber to which said packets are addressed.

9. (Original) An process comprising:

receiving radio frequency signals bearing downstream voice-over-IP packets and recovering said voice-over-IP packets and selecting only those packets which are addressed to a subscriber sharing a cable modem;

transmitting the selected downstream voice-over-IP packets from said shared cable modem to a voice-over-IP gateway having a plurality of subscriber line interlace circuits;

using the addressing information in said selected packets to route each packet to the appropriate subscriber line interface circuit;

in each subscriber line interface circuit, generating conventional POTS analog telephony signals and transmitting said signals to a subscriber who shares said cable modem via a tip and ring pair of a siamese cable, and receiving upstream POTS telephony signals and converting them to upstream POTS digital data;

packetizing said upstream POTS digital data and routing said upstream POTS digital data packets to said shared cable modem;

transmitting said upstream POTS digital data packets to a headend of a cable TV system via a hybrid fiber coaxial cable network using whatever media access control: and physical layer protocols are in use on said hybrid fiber coaxial cable network;

receiving downstream CATV analog signals from said headend via said hybrid fiber coaxial cable network and transmitting said CATV analog signals to each subscriber which is sharing~ said cable modem via the coaxial cable portion of a siamese cable drop line going to the premises of said subscriber.

10. (Original) The process of claim 9 further comprising the steps of coupling signals from a coaxial cable portion of a Siamese cable drop line to an analog CATV signal distribution system in the customer premises and coupling POTS analog telephone signals from a twisted pair portion of said siamese cable drop line to a POTS analog telephone signal distribution system in said customer premises.

11. (Original) An apparatus comprising:

cable modem means for receiving from a transmission medium signals bearing voice-over-IP packets and recovering said voice-over-IP packets and selecting only those packets which are addressed to a subscriber sharing said cable modem means and for

transmitting the selected packets over a LAN segment or other data path;

voice-over-IP gateway means having a plurality of subscriber line interface circuit means for using the addressing information in said selected packets to route each packet to the appropriate subscriber line interface circuit means;

a plurality of subscriber line interface circuit means, each for generating conventional POTS analog telephony signals from said voice-over-IP packet data routed to it and for transmitting said POTS analog telephony signals to a subscriber who shares said cable modem means via a tip and ring pair of a siamese cable, and for receiving upstream POTS telephony signals and converting them to upstream POTS digital data;

and wherein said voice-over-IP gateway means also functions to packetize said upstream POTS digital data and route the resulting packets to said shared cable modem;

and wherein said cable modem means also functions to transmit said upstream POTS digital data packets to the headend of a cable TV system via a hybrid fiber coaxial cable network using whatever media access control and physical layer protocol is in use on said transmission medium; and

means for receiving downstream CATV analog signals from said headend via said hybrid fiber coaxial cable network and transmitting said CATV analog signals to each subscriber which is sharing said cable modem via the coaxial cable portion of a siamese cable drop line going to the premises of said subscriber; and

distribution means in each said customer premises for coupling said analog CATV signals arriving on the coaxial cable portion of a siamese cable drop line to an analog CATV signal distribution system in said customer premises and for coupling a twisted pair portion of said siamese cable drop line to an analog POTS telephone distribution system in said customer premises.

12. (Original) An apparatus comprising:

a shared cable modem for coupling to a hybrid fiber coaxial cable CATV signal distribution medium;

a DSL concentrator coupled to said shared cable modem by a LAN segment or data path, each DSL concentrator having a plurality of XDSL modems, where XDSL means any type of DSL modem, each XDSL modem coupled to a twisted pair telephone line to send and receive XDSL signals therethrough;

a plurality of siamese cable drop lines for coupling to a plurality of subscribers, each having a twisted pair and a coaxial cable;

a plurality of junction boxes having a coaxial cable input for coupling to said hybrid fiber coaxial cable CATV signal distribution medium by a coaxial cable tap and each having a tip and ring input coupled to a twisted pair coupled to an XDSL modem in said DSL concentrator, and each having an output coupled a siamese cable, and functioning to couple XDSL signals arriving at said tip and ring input from an XDSL modem of said DSL concentrator to said twisted pair of said siamese cable coupled to said output and functioning to couple analog CATV signals received at said coaxial cable input to the coaxial cable of the siamese cable coupled to said output.

13. (Original) A process comprising:

using a shared cable modem, receiving from a transmission medium signals bearing downstream digital data representing the POTS, high speed downstream and lower speed bidirectional channels of DSL signals for each of a plurality of subscriber who share a cable modem, and recovering said digital data for each subscriber and determining to which subscriber sharing said cable modem the recovered data pertains;

transmitting the recovered data from said shared: cable modern to a DSL concentrator having a plurality of XDSL modems therein or associated therewith;

routing said digital data received from said shared cable modem to the appropriate XDSL modem assigned to service a particular subscriber which shares said cable modem;

in each XDSL modem converting said digital data to a XDSL signal and transmitting said XDSL signal to a subscriber who shares said cable modem via a tip and ring pair of a siamese cable, and receiving upstream XDSL signals and converting them to upstream XDSL digital data;

transmitting said upstream digital data from each said XDSL modem to said shared cable modem via a LAN segment or other data path;

transmitting said upstream XDSL digital data from each subscriber to a headend of a cable TV system using said shared cable modem via a hybrid fiber coaxial cable transmission medium using whatever media access control protocol and physical layer protocol is in use on said hybrid fiber coaxial cable transmission medium;

receiving downstream CATV analog signals from said headend via said hybrid fiber coaxial cable medium and transmitting said CATV analog signals to each subscriber which is sharing said cable modem via a coaxial cable portion of a siamese cable drop line going to the premises of said subscriber.

14. (Original) An apparatus comprising:

shared cable modem means for receiving from a CATV signal delivery medium signals bearing downstream digital data representing the POTS, high speed downstream and lower speed bidirectional channels of DSL signals for each of a plurality of subscriber who share said cable modem means, and for recovering said digital data for each subscriber and determining to which subscriber sharing said cable modem means the recovered data pertains, and for transmitting the recovered data from said shared cable modem to a DSL concentrator means having a plurality of DSL modem means therein or associated therewith, and for receiving upstream DSL data packets and transmitting them over said CATV signal delivery medium using whatever media access control and

physical layer protocols are in use on said CATV signal delivery medium;

DSL concentrator means having a plurality of XDSL modem means, each assigned to service one subscriber who shares said cable modem means, for routing said digital data received from said shared cable modem means to the appropriate XDSL modem means assigned to service a particular subscriber to whom a DSL signal created from said received digital data is supposed to be sent;

each of said XDSL modem means for converting said digital data routed to it by said DSL concentrator to an XDSL signal and transmitting said XDSL signal to a subscriber who shares said cable modem means and to whom said received digital data is addressed, said transmission being via a tip and ring pair of a siamese cable, and for receiving upstream DSL signals and converting them to upstream DSL data packets;

and wherein said DSL concentrator means further functions to transmit said upstream DSL data packets from each said XDSL modem to said shared cable modem means via a LAN segment or other data path;

filter means for receiving downstream CATV analog signals from said headend via said hybrid fiber coaxial cable medium and for transmitting said CATV analog signals to each subscriber which is sharing said cable modem via a coaxial cable portion of a siamese cable drop line going to the premises of said subscriber;

in each subscriber premises, a junction box coupling a coaxial cable portion of said siamese cable drop line to a CATV coaxial cable signal distribution system in the subscriber premises and coupling the twisted pair portion of said siamese cable drop line to a twisted pair POTS phone signal distribution system in said subscriber premises; and

an XDSL modem means coupled to said twisted pair POTS phone signal distribution system in said subscriber premises for recovering downstream LAN packets from both the high speed downstream and lower speed bidirectional channels of the XDSL signal on said twisted pair POTS phone signal distribution system and for outputting said recovered downstream LAN packets on a LAN transmission medium in

said subscriber premises, and for receiving upstream LAN packets for the DSL bidirectional lower speed channel and converting them to signals for said upstream DSL bidirectional channel.

15. (Original) A signal distribution system for serving a plurality of customers using a shared cable modem coupled to a shared CATV signal delivery medium, comprising:

a shared cable modem coupled to said medium for recovering downstream LAN packets and downstream DSL packet data and outputting packet data on a local area network segment, and for receiving upstream XDSL packet data and transmitting it to a headend via said medium;

a shared local area network packet switch and concentrator coupled by a LAN port and local area network segment to said cable modem and having at least one LAN port for each subscriber that shares said modem;

a plurality of diplexer filters each having high frequency input coupled to said cable TV signal delivery medium and a low frequency input coupled to a LAN port of said switch and concentrator and each having a drop cable output for coupling to a coaxial cable in a siamese cable drop line, each diplexer filter having a junction box therein having a twisted pair input and a twisted pair output for coupling to the twisted pair of one of said siamese cable drop lines, each said diplexer filter and junction box combination functioning to filter out all signals but downstream analog cable TV broadcast signals and couple said analog cable TV broadcast signals onto the coaxial cable of a siamese cable drop line and to receive baseband LAN packet data from said cable modem and packet switch and couple said LAN packet data onto a coaxial cable portion of the appropriate siamese cable drop line coupled to the subscriber to which the siamese cable is connected along with said analog TV signals and for selectively filtering to select upstream LAN packet data packets from said coaxial cable portion of each siamese cable drop line and transmit said selected upstream LAN packets to the appropriate LAN port of said packet switch, and said junction box for coupling XDSL

signals received at said twisted pair input onto a twisted pair portion of said siamese cable drop line coupled to the subscriber premises to which said XDSL signals are to be delivered and for coupling upstream XDSL signal onto the appropriate one of a plurality of twisted pair telephone lines dedicated to transmission of XDSL signals for the subscriber from whom said upstream XDSL signal originated;

a DSL concentrator coupled to said shared cable modem by a data path, said DSL concentrator having a plurality of XDSL modems, each XDSL modem coupled to a twisted pair telephone line which is coupled to said twisted pair input of a junction box in one of said diplexer filters and dedicated to sending downstream and receiving upstream XDSL signals to and from a particular subscriber who shares said cable modem via said twisted pair telephone lines dedicated to transmission of XDSL signals for said particular subscriber, each said XDSL modem for converting upstream XDSL signals to upstream XDSL packet data and sending each said packet to said cable modem via said DSL concentrator for transmission to said headend;

a plurality of siamese cable drop lines, each having a coaxial cable portion and a twisted pair telephone line portion, said coaxial cable portion coupled to said drop cable output of one of said diplexer filters and each said twisted pair telephone line coupled to said twisted pair output of a junction box associated with the same diplexer filter to which said coaxial cable portion of said Siamese cable dropline is coupled, each siamese cable drop line for coupling to a local area network of one of said plurality of subscribers which share said cable modem.

16. (Original) A process comprising:

receiving simultaneously in a plurality of diplexer filters from a cable TV signal delivery medium downstream analog CATV signals and downstream RF signals carrying downstream packet data and upstream RF signals carrying upstream packet data and filtering out in each diplexer filter all but said downstream analog CATV signals, and, in each said diplexer filter, receiving from a LAN segment input baseband packet data

transmissions, and, in each diplexer filter, combining said baseband packet data transmissions with said downstream analog CATV signals and transmitting the combined signals on a coaxial cable portion of a siamese cable drop line coupled to a distribution circuit of a predetermined one of a plurality of subscribers who share a cable modem located outside the premises of said subscribers, and selectively filtering to select upstream LAN packets from the coaxial cable portions of said siamese cable drop lines from a plurality of subscribers who share a cable modem, and transmitting said upstream LAN packets to the port of a shared packet switch dedicated to sending and receiving upstream and downstream LAN traffic for a particular one of said plurality of subscribers;

receiving simultaneously in said shared cable modem from said CATV signal delivery medium downstream analog CATV signals and downstream signals carrying downstream packet data and upstream signals carrying upstream packet data transmitted by other cable modems and filtering out in said shared cable modem all but said downstream signals carrying downstream packet data and recovering LAN packets and DSL packets therefrom, and filtering out all LAN and DSL packets not addressed to a subscriber that is sharing said cable modem and transmitting the selected downstream LAN and DSL packets Out on a first LAN segment or other data path, and receiving upstream LAN and DSL packets from said first LAN segment and transmitting said upstream LAN and DSL packets to a headend using whatever media access protocol and physical layer protocol is in use on said CATV signal delivery medium;

receiving said downstream LAN and DSL packets transmitted on said first LAN segment or other data path in a shared packet switch, and determining to which subscriber who is sharing said cable modem each of said downstream LAN and DSL packets are directed, and routing each LAN packet to an appropriate LAN segment coupled to said LAN segment input of a diplexer filter dedicated to the subscriber to whom said LAN packet is addressed, and, in said diplexer filter, coupling said downstream LAN packets onto a coaxial cable portion of a siamese cable drop line dedicated to said subscriber to whom said LAN packet is addressed, and in each diplexer filter, selectively filtering to select upstream LAN packets from the coaxial cable portion of the siamese cable drop

line dedicated to the subscriber from whom said upstream LAN packet originated and transmitting said selected upstream LAN packet to the appropriate port of said shared packet switch dedicated to sending and receiving LAN packets to and from said subscriber, and, in said packet switch, transmitting all said upstream LAN packets from all subscribers which share said packet switch to said shared cable modem;

in said shared cable modem, receiving one or more signals that carry downstream DSL packets and recovering said downstream DSL packets and discarding all but those downstream DSL packets addressed to one of said plurality of subscribers that share said cable modem and transmitting said DSL packets to a DSL concentrator, and receiving upstream DSL packets from said DSL concentrator and transmitting said upstream DSL packets to a headend using whatever media access protocol and physical layer protocol is in use on said CATV signal delivery medium;

in said DSL concentrator, receiving the downstream DSL packets for each subscriber which shares said cable modem and routing each said downstream DSL packet to an XDSL modem in said DSL concentrator that serves the particular subscriber to which said downstream DSL packet is directed;

in each said XDSL modem, converting said downstream DSL packets routed to said XDSL modem to a downstream XDSL signal and transmitting said downstream XDSL signal on a twisted pair phone line to a junction box of a diplexer filter coupled by a siamese cable drop line to the subscriber to whom said downstream XDSL signal is to be sent, and receiving upstream XDSL signals in each XDSL modem and converting said upstream XDSL signals to upstream DSL packets and transmitting said upstream DSL packets to said cable modem; and

at each said junction box in a diplexer filter, coupling said XDSL signals travelling in both directions between a twisted pair phone line forming part of said siamese cable drop line coupled to the subscriber to whom said XDSL signal is to be sent and a twisted pair phone line coupling said junction box to an XDSL modem serving the subscriber to whom the XDSL signals are to be sent and received;

in every subscriber premises, selectively filtering to select the analog CATV signals on a coaxial cable portion of said siamese cable drop line and coupling said analog CATV signals onto a coaxial cable CATV signal distribution system in said subscriber premises, and selectively filtering to select said downstream LAN packets and transmit them on a local area network medium in said subscriber premises, and selectively filter to select upstream LAN packets from said local area network medium and couple them onto said coaxial cable portion of said siamese cable drop line, and coupling said downstream XDSL signals from a twisted pair portion of said siamese cable drop line onto a POTS phone signal distribution system in said subscriber premises, and coupling upstream XDSL signals from said POTS phone signal distribution system onto said twisted pair portion of said siamese cable drop line.

17. (Original) An apparatus comprising:

filtering and combining means for receiving from a cable TV signal delivery medium downstream analog CATV signals and downstream RE signals carrying downstream packet data and upstream RF signals carrying upstream packet data and filtering out all but said downstream analog CATV signals, and, for receiving from a plurality of LAN segments coupled to a plurality of LAN segment inputs, each dedicated to carrying LAN traffic for one of a plurality of subscriber who share said filtering and combining means, baseband downstream LAN packets, and for combining said baseband downstream LAN packets received at each said input with said downstream analog CATV signals and transmitting the combined signals on a coaxial cable portion of a siamese cable drop line dedicated to carrying signals to a subscriber to whom said downstream LAN packets are addressed, and for selectively filtering signals on said coaxial cable portion of each said siamese cable drop line to select upstream LAN packets and for transmitting said upstream LAN packets originating from each said subscriber who shares said filtering and combining means on one of said LAN segments that is dedicated to carrying LAN packet traffic for said subscriber;

shared cable modem means for receiving from a cable TV signal delivery medium downstream analog CATV signals and downstream RE signals carrying downstream LAN packets and upstream RF signals carrying upstream LAN packets transmitted by other cable modems and filtering out all but said downstream RE signals carrying downstream LAN packets and recovering said downstream LAN packets and ignoring all downstream LAN packets not addressed to a subscriber that is sharing said cable modem means and transmitting the selected downstream LAN packets out on a first LAN segment or other data path, and for receiving upstream LAN packets from said first LAN segment or other data path and transmitting them to a headend using whatever media access control and physical layer protocol is in use on said cable TV signal delivery medium for upstream transmissions;

packet switch means for receiving said downstream LAN packets transmitted on said first LAN segment or other data path, and determining to which subscriber each said downstream LAN packet is directed, and routing each packet to and transmitting said downstream LAN packets on an appropriate LAN segment dedicated to carrying upstream and downstream LAN packet traffic for the subscriber to whom said downstream LAN packets are addressed and which is coupled to an appropriate LAN segment input of said filtering and combining means, and for receiving upstream LAN packets from each said LAN segment dedicated to a particular subscriber and concentrating all said upstream LAN packets for transmission and transmitting all said upstream LAN packets on said first LAN segment or other data path to said cable modem means;

and wherein said shared cable modem means is also for receiving one or more radio frequency signals that carry digital data that is encoded with DSL signals directed a plurality of subscribers some of which share said cable modem and recovering said digital data that carries the DSL signals for each of the plurality of subscribers who share said cable modem, and transmitting said digital data to a DSL concentrator means via said first LAN segment or other data path, and for receiving upstream DSL packets and for transmitting them on said cable TV signal delivery medium using whatever media access

control and physical layer protocol is in use on said cable TV signal delivery medium for upstream transmissions;

a DSL concentrator means for receiving said digital data that carries the downstream DSL signals for each subscriber which shares said cable modem from said shared cable modem means and for routing said digital data to the appropriate one of a plurality of XDSL modem means in or associated with said DSL concentrator that serves the particular subscriber to which said data is directed, and for receiving upstream DSL packets from said XDSL modems and routing them to said cable modem means;

a plurality of XDSL modem means, each for converting digital data routed to it to a conventional XDSL signal and transmitting said XDSL signal on a twisted pair phone line to the one of a plurality of junction boxes in said filtering and combining means dedicated to coupling XDSL signals to be delivered to a particular customer to the twisted pair portion of a siamese cable drop line coupled to the subscriber to whom said DSL signal is to be sent; and

each said junction box structured to couple XDSL signals received from a particular XDSL modem means onto a twisted pair phone line forming part of said siamese cable drop line coupled to the subscriber to whom said XDSL signal is to be sent;

a plurality of siamese cable drop lines coupling said junction boxes to a plurality of subscribers, each having a twisted pair portion and a coaxial cable portion;

signal distribution means in each subscriber premises coupled to one of said siamese cable drop lines for selectively filtering to select analog CATV signals from the coaxial cable portion of said siamese cable drop line and couple said CATV signals onto a CATV signal distribution network at the premises of said subscriber, and for filtering to select downstream LAN packets from said coaxial cable portion of said siamese cable drop line and coupled them onto a LAN in said subscriber premises, and for coupling XDSL signals on a twisted pair portion of said siamese cable drop line onto a POTS telephone signal distribution network in said customer premises; and

XDSL modem means coupled to said POTS telephone signal distribution network for converting Said XDSL signal to LAN packet traffic on a second LAN in said subscriber premises.

18. (Original) A signal distribution system for serving a plurality of customers using a shared cable modem coupled to a shared cable TV signal distribution medium, comprising:

a shared cable modem coupled to said medium;

a plurality of siamese cable drop lines, each dedicated to carrying signals to one of the subscribers sharing said cable modem and each having a first coaxial cable data path and a second twisted pair telephone line data path, each first coaxial cable data path of a siamese cable drop line for coupling to a local area network and a CATV signal delivery system of one of said plurality of subscribers which share said cable modem.

a shared local area network packet switch and concentrator coupled by a local area network segment or other data path to said modem and having at least one local area network port for each subscriber that shares said modem;

a plurality of diplexer filters, each dedicated to one of said subscribers who share said cable modem and each having a high frequency input coupled to said cable TV signal delivery medium and a low frequency input coupled to a port of said packet switch and concentrator dedicated to the same subscriber said diplexer filter is dedicated to, and each having a drop cable output for coupling to said first coaxial cable data path of a siamese cable drop line dedicated to the same subscriber said diplexer filter is dedicated to, each diplexer filter having a junction box therein having a twisted pair input and a twisted pair output for coupling to said twisted pair data path portion of the siamese cable drop line dedicated to the same subscriber said diplexer filter containing said junction box is dedicated to, each said diplexer filter and junction box combination functioning to filter out all signals appearing at said high frequency input except downstream analog cable TV

broadcast signals and couple said analog cable TV broadcast signals onto said first coaxial cable data path of the siamese cable drop line coupled to said drop cable output, and to receive downstream baseband LAN packet data from the port of said packet switch dedicated to the customer said diplexer filter is dedicated to and couple said downstream LAN packet data onto said first coaxial cable data path Of said siamese cable drop line along with said analog cable TV signals, and for filtering to select upstream LAN packet data from said first coaxial cable data path of the siamese cable drop line from said subscriber and transmit said upstream LAN packet data to the port of said packet switch dedicated to carrying LAN packet data from the subscriber from which each upstream LAN packet originated, and said junction box for coupling upstream and downstream POTS signals between a twisted pair input of said junction box and said second twisted pair data path of the siamese cable drop line corresponding to the same subscriber said junction box/diplexer filter combination corresponds to;

a voice-over-IP gateway coupled to said shared cable modem by a LAN segment or other data path to receive downstream voice-over-IP packets from said cable modem and to transmit upstream voice-over-IP packets to said cable modern for upstream transmission to a headend, each voice-over-IP gateway having a plurality of subscriber line interface circuits that convert downstream voice-over-IP packet data to POTS signals and transmit them on a twisted pair telephone line coupled to said twisted pair input of the junction box corresponding to the subscriber to which said POTS signals are to be transmitted such that POTS signals output by each said subscriber line interface circuit are coupled through said junction box to said second twisted pair data path of the siamese cable drop line coupled to the subscriber to whom said POTS signals are to be delivered, each subscriber line interface circuit also for converting upstream POTS signals received from said second twisted pair data path of the siamese cable drop line corresponding to the subscriber said subscriber line interface circuit services and converting said upstream POTS signals to POTS digital data, and wherein said voice-over-IP gateway delivers said POTS digital data from each subscriber to said cable modem for upstream transmission to a headend; and

means in each subscriber premises coupled to a siamese cable drop line from a diplexer filter/junction box combination for selecting analog downstream cable TV broadcast signals and coupling them onto a CATV signal distribution system in said subscriber's home and for selecting downstream LAN packets from said first coaxial cable data path and coupling them onto a LAN transmission medium in said subscriber premises and for selecting upstream LAN packets from said LAN transmission medium in said subscriber premises and for coupling them onto said first coaxial cable data path of said siamese cable drop line, and for coupling upstream and downstream POTS signals between a phone line distribution system in said subscriber premises and said second twisted pair data path of said siamese cable drop line.

19. (Original) A process comprising:

receiving from a transmission medium a plurality of signals including downstream analog CATV signals in each of a plurality of diplexer filters, and, in each diplexer filter, filtering out all but said downstream analog CATV signals, and, in each said diplexer filter, receiving at a baseband LAN input downstream baseband LAN packet data transmissions, and combining said downstream LAN packet data transmissions with said analog CATV signals and transmitting the combined signals on a coaxial cable portion of a siamese cable drop line coupled to a local area network of a predetermined one of a plurality of subscribers who is served by said diplexer filter, said plurality of subscribers all sharing a cable modem located outside the premises of said plurality of subscribers, and, in each diplexer filter, selecting upstream LAN packets from said coaxial cable portion of said siamese cable drop line and coupling them onto a LAN segment coupling said diplexer filter to a subscriber line interface circuit dedicated to servicing the subscriber from whom each said upstream LAN packet originated, and, in the junction box of each diplexer filter, coupling both upstream and downstream POTS telephone signals (hereafter upstream POTS and downstream POTS) between a twisted pair portion of said siamese cable drop line and a twisted pair coupled to a subscriber line interface circuit dedicated to servicing the subscriber from whom said upstream POTS originated;

receiving a plurality of signals from said transmission medium in a shared cable modem and filtering out all but downstream RF signals carrying downstream voice-over-IP packet data and LAN packet data, and recovering said downstream voice-over-IP packet data and LAN packet data, and selecting from said recovered packets only voice-over-IP packets and LAN packets addressed to a subscriber that is sharing said cable modem, and transmitting the selected downstream voice-over-IP packets out on a first LAN segment or other data path to a voice-over-IP gateway, and transmitting said LAN packets out on said first LAN segment or other data path to a packet switch shared by the same subscribers who share said cable modem, and receiving upstream LAN packet and upstream voice-over-IP packets from said shared packet switch and voice-over-IP gateway, respectively, and transmitting said packets to a headend using whatever media access control and physical layer protocols are used for the upstream on said transmission medium;

receiving said downstream voice-over-IP packets transmitted on said first LAN segment or other data path in said voice-over-IP gateway, and determining to which subscriber who is sharing said cable modem each said downstream voice-over-IP packet is directed, and routing each downstream voice-over-IP packet to an appropriate subscriber line interface circuit which is coupled by a twisted pair telephone line to a twisted pair input of a junction box in a diplexer filter which services the subscriber to whom said downstream voice-over-IP packet is directed, and, in each said subscriber line interface circuit converting said voice-over-IP packet data to said downstream POTS and transmitting said downstream POTS on said twisted pair, and, in each said subscriber line interface circuit and converting upstream POTS to digital data and in said voice-over-IP gateway, converting said digital data from each subscriber line interface circuit to upstream voice-over-IP packets and sending them to said shared cable modem;

in said packet switch, receiving the downstream LAN packet data from said cable modem for each subscriber which shares said cable modem and routing said each downstream LAN packet to an appropriate LAN port in said switch which is coupled via a LAN segment and transmitting said downstream LAN packet to the subscriber to whom the packet is addressed via said LAN segment and said baseband LAN input of a diplexer filter dedicated to said subscriber and the coaxial cable portion of a siamese cable drop line to a LAN of a subscriber to which each

said LAN packet is addressed, and receiving from each subscriber and the diplexer filter, LAN segment and LAN port dedicated to said subscriber said upstream LAN packets and transmitting them to said cable modem; for transmission to a headend;

in each subscriber premises, selectively filtering to select said downstream analog CATV signals and coupling them onto a CATV signal distribution network inside said subscriber premises, and selectively filtering to select downstream LAN packets and coupling them onto a LAN transmission medium inside said subscriber premises, and selectively filtering so as to couple upstream LAN packets from said LAN transmission medium onto said coaxial cable portion of said siamese cable drop line, and coupling said downstream POTS from said twisted pair portion of said siamese cable drop line to a telephone signal distribution system inside said customer premises, and coupling upstream POTS from said telephone signal distribution system inside said customer premises to said twisted pair portion of said siamese cable drop line.

20. (Original) An apparatus comprising:

filtration and combining means coupled to a cable TV signal delivery medium and having a plurality of diplexer filters, each dedicated to serving one subscriber and each having a junction box means, for filtering out all but downstream analog CATV signals from signals received from said cable TV signal delivery medium, and for receiving at a baseband LAN input baseband packet data transmissions, and for combining said baseband packet data transmissions with said downstream analog CATV signals and transmitting the combined signals on a coaxial cable portion of a siamese cable drop line coupled to a local area network of a predetermined one of a plurality of subscribers who share a cable modem means located outside the premises of said subscribers, and for filtering to select upstream LAN packets from signals on said coaxial cable portion of a siamese cable drop line and transmit them on a LAN segment coupled to said baseband LAN input, each said junction box means for coupling upstream and downstream POTS signals between a twisted pair portion of said siamese cable drop line and a twisted pair segment;

cable modem means for receiving and recovering downstream voice-over-IP packet data and downstream LAN packets from signals propagating on said cable TV signal delivery medium, and for filtering out all voice-over-IP packets and LAN packet not addressed to a subscriber that is sharing said cable modem means and transmitting the selected packets out on a first LAN segment or other data path to a voice-over-IP gateway means and to a packet switch means, and for receiving upstream LAN and voice-over-IP packets and transmitting them to a headend using whatever media access control and physical layer protocol is in use for upstream transmissions on said cable TV signal delivery medium;

voice-over-IP gateway means for receiving said voice-over-IP packets transmitted on said first LAN segment or other data path and for determining to which subscriber each said voice-over-IP packet is directed, and routing each voice-over-IP packet to an appropriate one of a plurality of subscriber line interface circuit means which is coupled by a twisted pair segment telephone line to a twisted pair input of one of said junction box means in said filtration and combining means which is coupled by a siamese cable drop line to the premises of the subscriber to which said voice-over-IP packet is addressed, and for receiving data from each subscriber line interface circuit means created from upstream POTS signals from the subscriber to which said subscriber line interface circuit means is dedicated and packetizing said data as a voice-over-IP packet and transmitting said voice-over-IP packet to said cable modem means;

a plurality of subscriber line interface circuit means, each for converting said voice-over-IP packet data routed to it by said voice-over-IP gateway means to a downstream POTS signal and transmitting said downstream POTS signal on a twisted pair segment telephone line coupled to a junction box means in said filtration and combining means which is coupled to the subscriber to which said downstream POTS signal is to be delivered;

a packet switch means for receiving downstream LAN packet data for each subscriber which shares said cable modem means from said first LAN segment or other data path coupled to said shared cable modem, and for routing said downstream LAN

packet data to an appropriate LAN port in said packet switch means which is coupled to the LAN of a subscriber to which said LAN packet data is addressed via a LAN segment coupled to the baseband LAN input of said filtration and combining means that is dedicated to LAN traffic of said subscriber, and, at each said LAN port, transmitting said LAN packet data on said LAN segment to said filtration and combining means, said packet switch means also for receiving upstream LAN packets and routing them to said cable modem means.

21. (Original) A signal delivery system comprising:

first means shared by a plurality of subscribers for receiving and distributing television broadcasts to said plurality of subscribers via first data path transmission medium going into each subscriber premises;

second means shared by a plurality of subscribers for receiving downstream digital data and transmitting said data into each subscriber's premises in a digital and/or analog signal format via said first data path and/or a second data path of said transmission medium going into said subscriber's premises, and for receiving upstream digital data transmitted from each subscriber premises in digital and/or analog format and converting said upstream digital data to a proper format for transmission upstream via an upstream transmission medium to a headend using whatever media access control and physical layer protocol is in use on said upstream transmission medium.

22. (Original) A signal distribution system, comprising:

a shared network device, having one or more cable modem, each shared by a plurality of consumers and each coupled to a headend through a transmission medium;

a media terminal adapter coupled to receive LAN packets and VOIP packets from said shared cable modem via a LAN segment and functioning to convert downstream

VOIP packets into analog downstream POTS signals in a POTS frequency band and modulate said downstream LAN packets onto a data carrier having a spectrum which does not conflict with the spectrum of said POTS signals, and functioning to receive upstream POTS signals and convert them to upstream VOIP packets and send them to said shared network device and to receive upstream LAN packets and transmit them to said shared network device; and

a LAN segment coupled to a LAN inside a subscriber premises, for carrying analog upstream and downstream POTS signals and LAN packets modulated on a data carrier having a frequency outside the frequency band of said POTS signals.

23. (Original) A signal distribution system, comprising:

a shared network device means, having one or more cable modem means, each shared by a plurality of consumers and each coupled to a headend through a transmission medium; said shared network device means for supplying analog ~A signals directly to each of a plurality of subscribers who share said shared network device means and each said cable modem means for receiving and recovering downstream LAN and VOIP packets addressed to one of the subscribers who shares said cable modem means and for transmitting said recovered LAN and VOIP packets on a first LAN segment, and said cable modem means also for receiving upstream LAN and VOIP packets from each subscriber who shares a cable modem means, and transmitting them to a headend via said transmission medium using whatever media access control and physical layer protocols are in use for upstream transmissions on said transmission medium;

a plurality of media terminal adapter means, each dedicated to servicing a particular subscriber who shares a shared cable modem to which said media terminal adapter means is coupled, each said media terminal adapter means coupled via a LAN segment to receive downstream LAN packets and VOIP packets from a shared cable modem, each media terminal adapter means for converting downstream VOIP packets into analog downstream POTS signals in a POTS frequency band and for modulating said

LAN packets onto a data carrier having a spectrum which does not conflict with the spectrum of said downstream POTS signals, and for receiving upstream POTS signals and convert them to upstream VOIP packets and sending them to said shared network device and for receiving upstream LAN packets and transmitting them to the appropriate shared cable modern means of said shared network device; and

plurality of LAN segments, each LAN segment coupled to a LAN inside a particular subscriber's premises for carrying analog upstream and downstream POTS signals and LAN packets modulated on a data carrier having a frequency outside the frequency band of said POTS signals.

24. (Original) A signal distribution process, comprising the steps of:

supplying analog CATV signals directly to each of a plurality of subscribers who share a shared network device and using each of a plurality of shared cable modems to receive and recover downstream LAN and VOIP packets addressed to one of the subscribers who shares said cable modem and transmitting each said recovered LAN and VOIP packet addressed to a particular subscriber who shares said cable modem on a first LAN segment to a media terminal adapter which is dedicated to processing traffic to and from that subscriber;

receiving upstream LAN and VOIP packets from each subscriber who shares said network device and transmitting them to a shared cable modern shared by the subscriber from whom said upstream LAN and VOIP packets originated and using said cable modem to transmit said upstream LAN and VOIP packets to a headend via said transmission medium using whatever media access control and physical layer protocols are in use for upstream transmissions on said transmission medium;

in each of said plurality of media terminal adapters, converting downstream VOIP packets into analog downstream POTS signals in a POTS frequency band and modulating said LAN packets onto a data carrier having a spectrum which does not conflict with the

spectrum of said downstream POTS signals, and receiving upstream POTS signals and converting them to upstream VOIP packets and sending them to the cable modem shared by the subscriber from who said upstream POTS signals originated, and receiving upstream LAN packets and transmitting them to the cable modern shared by the subscriber from who said upstream LAN packets originated.